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Forest Statistics for NEW YORK

Forest District No. 14



Forest Statistics Series:

New York No. 14

Northeastern Forest Experiment Station

Upper Darby, Pennsylvania

Ralph W. Marquis, Director

1954

FOREWORD

This is the fourteenth in a series of reports about forest areas and timber volumes in the State of New York. These reports are products of the forest survey of the Northeast, carried on by the Northeastern Forest Experiment Station as part of the nationwide forest survey being made by the Forest Service, U. S. Department of Agriculture.

A similar report has been prepared for each of the other forest districts in the State of New York. The primary purpose of these reports is to provide basic forest statistics for the administrative use of the New York Department of Conservation.

The New York Department of Conservation aided the Northeastern Station greatly in the forest survey of the State. The Department not only provided the aerial photographs used in the survey, but also cooperated in many other phases of the work.

Field work in Forest District No. 14 was supervised by N. B. Griswold. The statistical procedures for obtaining field-inventory data were developed by C. Allen Bickford. Computations were made under the supervision of Roland H. Ferguson.

Ralph W. Marquis

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Director

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FOREST STATISTICS FOR NEW YORK FOREST DISTRICT NO. 14

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GENERAL

Forest District No. 14 is located in southeastern New York. It is bounded on the east by the New York-Connecticut line and on the west by the Hudson River. It extends from New York City north as far as the Massachusetts-Connecticut line. Dutchess, Putnam, and Westchester Counties are included in the District.

The topography in the northern portion is characterized by ridges and valleys. The slopes are short and moderately steep. Farther south, the land becomes gently rolling. About 87 percent of the commercial forest-land area drains into the Hudson River. The remainder drains into the Housatonic River and into Long Island Sound.

Agriculture is dominant in most of the District. The principal type is dairying. Fruit production is also important. The southern tip is mainly metropolitan and industrial. The industries are generally small and diversified.

Forest Area

The District has a total land area of 951,000 acres. The forest-land area is nearly 487,000 acres. Slightly less than 21,000 acres are reserved from timber cutting. There

is little or no forest land incapable of producing sawtimber trees but there are extensive high, rocky, ridge areas that are very poor sites for growing a commercial timber crop. The remaining 466,000 acres are classed as commercial forest land. A little more than one-half of this acreage is in Dutchess County.

Ownership

About 99 percent of the commercial forest land is privately owned. Of this, farmers own one-fifth. Only 1 percent is in public ownership. The State of New York owns about two-thirds and the remainder is municipally owned.

Forest Types

Oak types occupy about 54 percent of all the commercial forest-land area. The red oak type alone is found on more than one-fourth. These types are usually found on the higher and better sites. The sugar maple-beech type covers about 12 percent of the forest area and occupies sites similar to the oak types. The aspen-gray birch type occurs on 18 percent of the area and its presence may indicate past mistreatment of the land. The ash-elm-maple and the river birch-sycamore types are found on 12 percent of the forest land, on the moister sites.

Softwood types occupy only 4 percent of the commercial forest-land area. They are almost equally divided between the hemlock type and white pine types.

Forest Stands

Sawtimber stands are present on 21 percent of the commercial forest land. However, stands of more than 5,000 board feet per acre occur on a little less than 8 percent. This small acreage carries nearly one-half of the total board-foot volume.

Poletimber stands cover about 48 percent of the forest-land area. Seedling-and-sapling stands are found on 31 percent (142,700 acres). This acreage bears less than 5 percent of the total cubic-foot volume.

Timber Volume

The commercial forests contain about 547.4 million board feet (log scale, International $\frac{1}{4}$ -inch rule) of live

sawtimber. The oak species make up about 47 percent of this volume, and the red oaks alone account for 30 percent. Softwood species make up about 13 percent of the total board-foot volume. A little more than one-half of the softwood sawtimber is hemlock.

The growing stock amounts to 273.2 million cubic feet. Of this, 109.5 million are in sawtimber trees and 163.7 million are in poletimber trees. The total cubic volume is equivalent to 3.4 million rough standard cords.

NEW YORK FOREST DISTRICT NO. 14

Table 1.--Land area by major classes, 1950

Class of land ¹	Area	
	<u>Acres</u>	<u>Percent</u>
Forest land:		
Commercial	466,300	49
Noncommercial ²	20,600	2
All forest land	486,900	51
Nonforest land	464,100	49
All land ³	951,000	100

¹See Appendix for definitions.

²Includes 4,308 acres in State Parks reserved from timber cutting. All State ownership figures are as of September 30, 1952.

³Census of Agriculture, 1950. Water areas of 1 to 40 acres are included in the estimate of nonforest acreage.

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Table 2.--Land area and commercial forest-
land area by county, 1950

County	Land area	Commercial forest- land area	
	<u>Acres</u>	<u>Acres</u>	<u>Percent</u>
Dutchess	522,200	234,700	45
Putnam	150,400	96,300	64
Westchester	278,400	135,300	49
All	951,000	466,300	49

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Table 3.--Commercial forest-land area
by ownership, 1950

Ownership class	Acreage held	
	<u>Acres</u>	<u>Percent</u>
Private:		
Farm forest land ¹	95,000	20
Other private	368,300	79
Total private	463,300	99
Public:		
State	2,000	1
Municipal	1,000	(<u>2</u> /)
Total public	3,000	1
All ownerships	466,300	100

¹Census of Agriculture, 1950.

²Less than 1 percent.

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Table 4.--Commercial forest-land area
by forest type, 1950

Forest type	Area	
	<u>Acres</u>	<u>Percent</u>
Softwood types	14,400	4
Red oak	132,800	29
Chestnut oak	75,400	16
White oak	42,600	9
Sugar maple-beech	57,800	12
Aspen-gray birch	86,100	18
Other hardwood types	57,200	12
All types	466,300	100

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Table 5.--Commercial forest-land area by forest-type group
and stand-size class, 1950

Forest-type group	Saw- timber stands	Pole- timber stands	Seedling- and-sapling stands	Total area
	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>
Red oak	25,200	79,300	28,300	132,800
Chestnut oak	24,000	43,700	7,700	75,400
White oak	9,900	16,300	16,400	42,600
Sugar maple-beech	13,900	28,500	15,400	57,800
Aspen-gray birch	(1/)	34,700	51,400	86,100
Other types	27,900	20,200	23,500	71,600
All types	100,900	222,700	142,700	466,300
Percent	21	48	31	100

¹No field plots fell in this stand-size class.

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Table 6.--Commercial forest-land area by stand-size
class and watershed, 1950

Stand-size class	Watershed		Total
	Hudson River	Housatonic River ¹	
	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>
Sawtimber stands	96,500	4,400	100,900
Poletimber stands	184,700	38,000	222,700
Other ²	126,900	15,800	142,700
Total	408,100	58,200	466,300
Percent	87	13	100

¹Includes 22,600 acres tributary to Long Island Sound.

²Includes 36,700 acres of poorly stocked (less than 40 percent) stands.

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Table 7.--Net volume of live timber on commercial
forest land by species, 1950

Species	Growing stock ¹		Saw- timber ²
	<u>Thousand cu.ft.</u>	<u>Equivalent in cords</u>	<u>Thousand bd.ft.</u>
Hemlock	8,400	105,000	36,700
White pine	4,800	60,000	15,400
Other softwoods	5,000	62,500	18,200
All softwoods	18,200	227,500	70,300
Red oaks	61,600	770,000	163,900
Red maple	33,200	415,000	62,900
White oaks	17,900	223,800	60,700
Chestnut oak	46,000	575,000	34,400
Elm	10,500	131,200	28,300
Sugar maple	11,400	142,500	27,100
Hickory	12,500	156,300	24,600
Ash	16,700	208,800	23,300
Beech	4,500	56,300	22,400
Yellow-poplar	4,200	52,500	11,300
Sweet birch	7,700	96,200	10,900
Black locust	5,800	72,500	4,100
Basswood	2,500	31,200	2,500
Other hardwoods	20,500	256,200	700
All hardwoods	255,000	3,187,500	477,100
All species ³	273,200	3,415,000	547,400

¹Includes sawtimber. Cord equivalent in rough stand-
ard cords is assumed to average 80 cubic feet of peeled
wood.

²Log scale, International $\frac{1}{4}$ -inch rule.

³Excludes the net volume of cull trees--3,800,000
cubic feet.

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Table 8.--Net volume of live timber on commercial
forest land by diameter class, 1950

Diameter class ¹ (in inches at breast height)	Growing stock	Saw- timber
	Thousand cu.ft.	Thousand bd.ft.
Softwoods:		
6	1,100	---
8	1,800	---
10	2,100	7,000
12	3,000	11,400
14	3,400	14,700
16	1,400	7,000
18 +	5,400	30,200
All softwoods	18,200	70,300
Hardwoods:		
6	50,100	---
8	54,900	---
10	55,800	---
12	24,300	103,400
14	19,400	85,100
16	14,000	70,600
18	9,700	54,700
20	6,800	39,800
22	6,100	35,800
24	4,700	28,400
26	4,400	27,800
28 +	4,800	31,500
All hardwoods	255,000	477,100
Total	273,200	547,400

¹The midpoint of each 2-inch diameter class is indicated.

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Table 9.--Net volume of live timber on commercial forest
land by forest type, 1950

Forest type	Growing stock		Saw- timber
	<u>Thousand</u> <u>cu.ft.</u>	<u>Equivalent</u> <u>in cords</u>	<u>Thousand</u> <u>bd.ft.</u>
Softwood types	23,300	291,300	78,100
Red oak	74,400	930,000	140,900
Chestnut oak	63,700	796,300	87,100
White oak	22,600	282,500	45,700
Sugar maple-beech	32,200	402,500	81,700
Aspen-gray birch	18,000	225,000	8,300
Other hardwood types	39,000	487,400	105,600
All types	273,200	3,415,000	547,400

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Table 10--Average net volume of live timber per acre
of commercial forest land, by
stand-size class, 1950

Stand-size class (and acreage of each class)	Growing stock	Saw- timber
	<u>Cubic feet</u>	<u>Board feet</u>
Sawtimber stands:		
More than 5,000 bd.ft. per acre (35,300 acres)	1,700	7,400
1,500 to 5,000 bd.ft. per acre (65,600 acres)	1,000	2,500
Poletimber stands:		
More than 600 cu.ft. per acre (144,200 acres)	700	700
200 to 600 cu.ft. per acre (78,500 acres)	400	200
Seedling-and-sapling stands (142,700 acres)	90	60
Average, all classes ¹ (466,300 acres)	590	1,200

¹Hardwoods constitute 87 percent of the total board-foot volume or 93 percent of the total cubic-foot volume in all stand-size classes. The average cubic volume in all stand-size classes is equivalent to 7 cords per acre.

A P P E N D I X

DEFINITIONS OF TERMS

Forest Areas

Forest-land area.--Includes (a) lands that are at least 10 percent stocked by trees of any size and capable of producing timber or other wood products, or of exerting influence on the climate or on the water regime; (b) land from which the trees described in (a) have been removed to less than 10 percent stocking and which has not been developed for other use; and (c) afforested areas. (Forest tracts of less than 1 acre, isolated strips of timber less than 120 feet wide, and abandoned fields and pastures not yet 10 percent stocked are excluded.)

Commercial forest-land area.--Forest land that is (a) producing, or physically capable of producing, usable crops of wood (usually sawtimber), (b) economically available now or prospectively, and (c) not withdrawn from timber utilization.

Noncommercial forest-land area.--Forest land (a) withdrawn from timber utilization through statute, ordinance, or administrative order but which otherwise qualifies as commercial forest land, and (b) incapable of yielding usable wood products (usually sawtimber) because of adverse site conditions.

Forest Types

Forest types are classified according to the species or species group that accounts for the major portion of the stand in terms of cubic feet in sawtimber and poletimber stands, or the number of stems in seedling-and-sapling stands.

Stand-Size Classes

Sawtimber stands.--Stands with sawtimber trees having a minimum net volume per acre of 1,500 board feet, International $\frac{1}{4}$ -inch rule.

Poletimber stands.--Stands failing to meet the sawtimber stand specification, but at least 10 percent stocked with poletimber and larger (5.0 inches and larger) trees, and with at least half the minimum stocking in poletimber trees. (Poletimber stands carry at least 200 cubic feet per acre.)

Seedling-and-sapling stands.--Stands not qualifying as either sawtimber or poletimber stands, but having at least 10 percent stocking of trees of commercial species and with at least half the minimum stocking in seedling-and-sapling trees.

Other areas.--Forest-land areas not qualifying as sawtimber, poletimber, or seedling-and-sapling stands. (Includes nonstocked areas.)

Tree Classes

Sawtimber trees.--Trees of commercial species that contain at least one merchantable sawlog as defined by regional practice and that are of the following minimum diameters at breast height (d.b.h.): Softwoods 9.0 inches and hardwoods 11.0 inches. (All butt sawlogs are considered merchantable. Where the butt is defective, upper sawlogs are considered merchantable if they account--in terms of aggregate net volume--for 50 percent or more of the gross volume below the top of the uppermost sawlog. Softwood sawlogs are at least 6.0 inches in diameter inside bark at small end; 8 to 16 feet in length; sound and straight enough to be manufactured into standard lumber. The smaller logs are generally free of surface defects other than small tight knots. Hardwood sawlogs are at least 8.0 inches in diameter inside bark at small end; 8 to 16 feet in length; suitable for sawing into standard lumber, construction timbers, or ties.)

Poletimber trees.--Trees 5.0 inches d.b.h. and larger of commercial species that do not meet the specifications for sawtimber trees but do meet regional specifications of species, soundness, and freedom from defect. (These are the trees that are straight and clear enough to make sawtimber trees eventually.)

Seedling-and-sapling trees.--Trees of commercial species less than 5.0 inches in diameter at breast height.

Cull trees.--Live trees of sawtimber or poletimber size that are unmerchantable for sawlogs now or prospectively because of defect, rot, or species.

Timber Volume

Growing stock.--Net volume, in cubic feet, of live sawtimber trees and live poletimber trees from stump to a minimum 4.0-inch top (of central stem) inside bark.

This volume is also given in rough standard cords (bark included). Cord volume is derived from growing stock by applying a factor of 80 cubic feet per cord.

Live sawtimber volume.--Net volume in board feet, International $\frac{1}{4}$ -inch rule, of live sawtimber trees.

FOREST - SURVEY METHODS

These forest statistics are based on information gathered from aerial photographs and from sample plots examined on the ground.

First, photo-interpretation plots were marked off on the aerial photographs. These plots were distributed uniformly by mechanical means over photographs of the entire district. Trained photo-interpreters then classified each photo-plot as either forest or nonforest. Forest plots were classified further according to stand-size and forest type.

Field crews inspected some of the photo-plots on the ground. Enough plots were selected at random so as to attain a specified level of statistical accuracy. Species and volume data were collected on these ground plots; and the photo classification of stand size and forest type was verified or--if necessary--changed.

The survey was designed for maximum efficiency in estimating total cubic volume to meet the national standards of accuracy.

ACCURACY OF THE ESTIMATES

The estimates in this report may contain two kinds of error. First, photo-interpreters may make mistakes of judgment and fieldmen may make mistakes in measuring or record-

ing. There is no practical way of finding out just how often such errors occur. But they are kept to a minimum by closely checking all phases of the work.

The second kind of error is associated with sampling procedures. The size of this sampling error can be measured. In Forest District No. 14 the probabilities are 2 out of 3 that the actual forest area is within ± 3.7 percent of the estimated forest area, that the actual cubic-foot volume is within ± 5.5 percent of the estimated cubic-foot volume, and that the actual board-foot volume is within ± 12.6 percent of the estimated board-foot volume. This does not include any mistakes in measurement or classification.

These percentages show that the area estimates are more accurate than the volume estimates, and that the cubic-foot estimates are more accurate than the board-foot estimates.

In each of the tables, the total figures are more accurate than the subtotals. The subtotals are more accurate than any of the individual figures. Figures that are small in relation to totals are subject to larger sampling errors.

S P E C I E S T A L L I E D

The various commercial tree species tallied in New York Forest District No. 14 are listed below. Approved common names¹ are shown in parentheses if these differ from the brief name used in the tables. Other tree species may occur in the area, but unless they were tallied on the field plots they were not included in the following list.

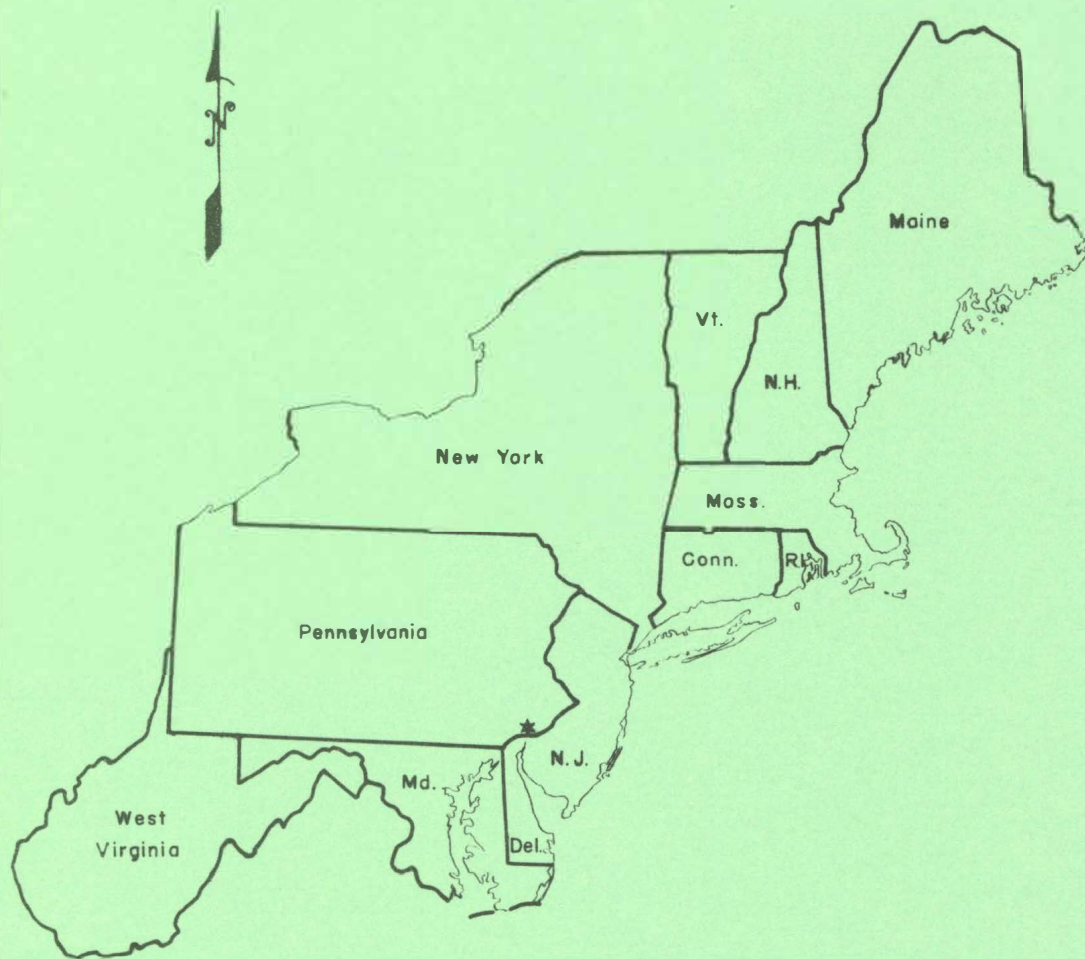
Softwoods

Hemlock (Eastern hemlock)	- <u>Tsuga canadensis</u>
White pine (Eastern white pine)	- <u>Pinus strobus</u>
(Red pine)	- <u>Pinus resinosa</u>
Other softwoods	
(Northern white-cedar)	- <u>Thuja occidentalis</u>
(Red spruce)	- <u>Picea rubens</u>

¹ LITTLE, ELBERT L., JR. CHECK LIST OF NATIVE AND NATURALIZED TREES OF THE UNITED STATES (INCLUDING ALASKA). U.S. DEPT. AGR. AGR. HANDB. 41. 472 PP. 1953.

Hardwoods

Red oaks (Northern red oak)	- <u>Quercus rubra</u>
(Black oak)	- <u>Quercus velutina</u>
(Scarlet oak)	- <u>Quercus coccinea</u>
Red maple	- <u>Acer rubrum</u>
White oaks (White oak)	- <u>Quercus alba</u>
(Swamp white oak)	- <u>Quercus bicolor</u>
Chestnut oak	- <u>Quercus prinus</u>
Elm (American elm)	- <u>Ulmus americana</u>
Sugar maple	- <u>Acer saccharum</u>
Hickory	- <u>Carya species</u>
Ash	- <u>Fraxinus species</u>
Beech (American beech)	- <u>Fagus grandifolia</u>
Yellow-poplar	- <u>Liriodendron tulipifera</u>
Sweet birch	- <u>Betula lenta</u>
Black locust	- <u>Robinia pseudoacacia</u>
Basswood (American basswood)	- <u>Tilia americana</u>
Other hardwoods	
(Yellow birch)	- <u>Betula alleghaniensis</u>
(Paper birch)	- <u>Betula papyrifera</u>
(Aspen)	- <u>Populus species</u>
(Sweetgum)	- <u>Liquidambar styraciflua</u>
(Blackgum)	- <u>Nyssa sylvatica</u>
(Flowering dogwood)	- <u>Cornus florida</u>



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